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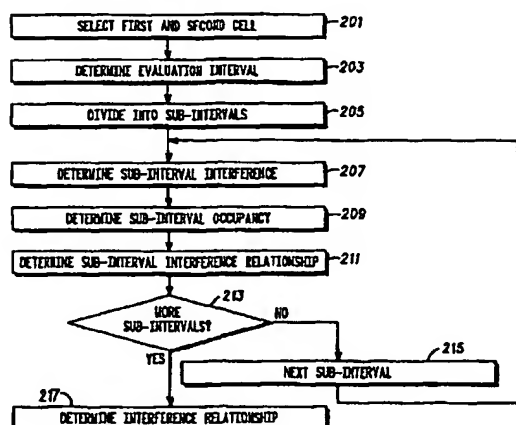
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(54) Title: METHOD AND APPARATUS FOR DETERMINING AN INTERFERENCE RELATIONSHIP BETWEEN CELLS OF A CELLULAR COMMUNICATION SYSTEM



(57) Abstract: The invention relates to a system for determining an interference relationship between cells of a cellular communication system comprising at least a first cell and a second cell. A method comprises the step of dividing (205) an evaluation interval into a plurality of sub-intervals. For each sub interval, the method proceeds to determine (209) a sub-interval simultaneous occupancy related to the correlation between communication in the first and second cell. The sub-interval simultaneous occupancy is determined from an occupancy of each of the first cell and the second cell. A sub-interval potential interference is then determined (209) in response to the interference characteristics in each sub-interval. An interference relationship is subsequently determined from the sub-interval potential interferences and the sub-interval simultaneous occupancies. The interference relationship provides a measure of the impact of interference between the first and second cell suitable for frequency planning.

INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 H04Q7/36

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 H04Q H04L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 475 868 A (DUQUE-ANTON ET AL) 12 December 1995 (1995-12-12) column 3, line 64 - column 4, line 41	1-11, 19
Y	*Idem*	12-18
Y	WO 90/10341 A1 (TELEVERKET) 7 September 1990 (1990-09-07) abstract; claims 5-8; figure 1 page 17, line 12 - page 19, line 17	12-18
Y	US 6 393 277 B1 (SAHIN YILDIRIM ET AL) 21 May 2002 (2002-05-21) abstract; claim 1; figure 2 column 6, line 18 - line 61	1-19
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☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 02/096141 A1 (POLSKA TELEFONIA CYFROWA SP. Z.O.O; WAWRZYNSKI, PAWEL; LEHMANN, GRZEGO) 28 November 2002 (2002-11-28) abstract; claim 1; figures 1,3 page 6, line 1 - line 23	1-19
Y	WO 02/30136 A2 (ERICSSON, INC) 11 April 2002 (2002-04-11) abstract; claims 1,4; figures 4,9 page 20, line 12 - line 30 page 27, line 6 - page 28, line 17	1,19
Y	WO 01/97553 A2 (TELEFONAKTIEBOLAGET L M ERICSSON) 20 December 2001 (2001-12-20) abstract; figures 2,4 page 4, line 11 - page 5, line 4 page 8, line 6 - line 22	1,19
A	GB 2 356 320 A (* MOTOROLA LIMITED) 16 May 2001 (2001-05-16) abstract; figure 2 page 3, line 9 - page 4, line 2 page 11, line 10 - page 12, line 9	1-19

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/EP 03/50950

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5475868	A	12-12-1995	DE 4225688 A1	10-02-1994
			DE 4303999 A1	18-08-1994
			AU 670955 B2	08-08-1996
			AU 4433993 A	17-02-1994
			CN 1086363 A , B	04-05-1994
			DE 59309538 D1	02-06-1999
			EP 0585994 A2	09-03-1994
			JP 7007764 A	10-01-1995
WO 9010341	A1	07-09-1990	SE 465146 B	29-07-1991
			AT 125085 T	15-07-1995
			CA 2046907 A1	04-09-1990
			DE 69020896 D1	17-08-1995
			DE 69020896 T2	30-11-1995
			EP 0461176 A1	18-12-1991
			ES 2074566 T3	16-09-1995
			SE 8900742 A	04-09-1990
			US 5442804 A	15-08-1995
US 6393277	B1	21-05-2002	NONE	
WO 02096141	A1	28-11-2002	PL 347682 A1	02-12-2002
			CZ 20033161 A3	17-03-2004
			EP 1389401 A1	18-02-2004
			HU 0400092 A2	28-04-2004
			US 2004157615 A1	12-08-2004
WO 0230136	A2	11-04-2002	US 6735436 B1	11-05-2004
			AU 9494201 A	15-04-2002
			DE 10196721 T0	20-11-2003
			GB 2385243 A , B	13-08-2003
WO 0197553	A2	20-12-2001	AU 7476201 A	24-12-2001
GB 2356320	A	16-05-2001	NONE	